CASE REPORT

# Laparoscopic cholecystectomy in a type Va Mirizzi syndrome patient

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## Abstract

Mirizzi syndrome is a rare syndrome, caused by the compression of gall stones which may result in CBD obstruction or fistula formation. It may sometimes present without any prior symptoms. It has been classified into five types by Csendes. Usually open surgical approach is recommended for the condition, especially for Types III-V. We present the case of a patient who presented with right hypochondrial pain and was intra-operatively discovered to have type Va Mirrizi syndrome and was managed successfully laparoscopically.

**Keywords:** Mirizzi syndrome, type Va, Laparoscopy.

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## Introduction

Gallbladder stones is a widespread disease worldwide with a significant economic impact. It has been reported that gallbladder disease (GD) comprises 13% to 50% of digestive diseases in Western countries, including the US and Europe, and 2% to 10% in Eastern countries. Although data from Pakistan is scarce in this regard, the prevalence of gallstones in studies conducted locally has shown to be from 9% to 10% of the population. Laparoscopic cholecystectomy has become the treatment of choice for gall bladder stones. This is due to minimal incisions, quick post-operative recovery and short hospital stay. Almost 80% of all cholecystectomies are performed via this approach at present.[1]

Pablo Mirizzi, in 1948, first described a syndrome caused by the compression of an impacted gall stone in the cystic duct or gall bladder neck onto the hepatic duct resulting in symptoms of obstructive jaundice.[2] With persistent compression there is necrosis and ulceration that produces local inflammation leading to external compression of and erosion in the bile duct. This leads to a fistulous communication between the gallbladder and the bile duct. Depending upon the extent of communication between the two, the condition is divided into different types.[3]

Csendes' classified cholecystobiliary communication into four types depending upon the size of the fistula in relation to the circumference of Common Bile Duct.[4] This classification was revised with the addition of a fifth type in 2007. The new type is a bilio-enteric fistula in which an abnormal communication is present between the gall bladder and bowel, usually duodenum or colon. It has been estimated that Type V Mirizzi could co-exist in up to 29% of patients along with other types.[3]

Diagnosing the condition is often difficult since there are no pathognomic features. The most commonly seen findings, unsurprisingly, are obstructive jaundice and abdominal pain. Sensitivity of different diagnostic imaging is variable. Diagnostic sensitivity of ultrasound has been reported to be 13%, CT scan 31%, MRCP 76%, and for ERCO 58%.[5] Laparoscopic surgery is considered difficult and hazardous in Mirizzi syndrome due to the difficulty in dissection and loss of normal anatomy as a result of severe inflammation, adhesions, and fistulous communication. Most authors recommend the open approach for the management of the condition with laparoscopic approach being reserved only for type 1.[2,6]

We present our experience of laparoscopic management of a type Va Mirizzi syndrome patient.

## Case

A 43-year-old male presented to us in January 2021 through the OPD at the Department of Surgery, Services Hospital, Lahore, with complaint of pain in the right upper quadrant of the abdomen for five years. He has been a smoker for the last 20 years. He had an episode of Covid-19 about six months back from which he had a complete recovery. He was diagnosed as a case of Cholelithiasis about five years back. He had intermittent episodes of pain in the right upper quadrant of the abdomen for the last five years. Pain was usually aggravated after food intake and relieved by pain medication. There were no other associated symptoms. He was never hospitalised for this complaint. On examination, his abdomen was soft, non-tender and there was no palpable visceromegaly. Murphy's Sign was negative. His general physical examination was unremarkable. His baseline investigations were within the normal range showing no signs of infection, inflammation or jaundice. Repeat ultrasound of the abdomen showed gallbladder containing multiple stones. Preoperatively, the diagnosis of cholelithiasis was made and Laparoscopic Cholecystectomy was planned. Laparoscopic Cholecystectomy was started after insertion of four ports.

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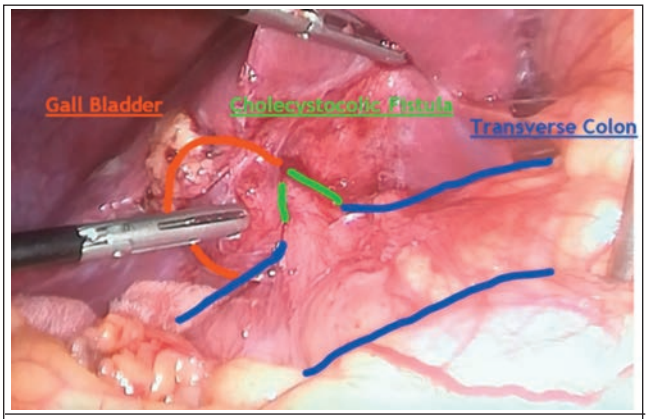


**Figure-1:** Fistulous (green) communication between transverse colon (blue) and gallbladder(red) is shown.

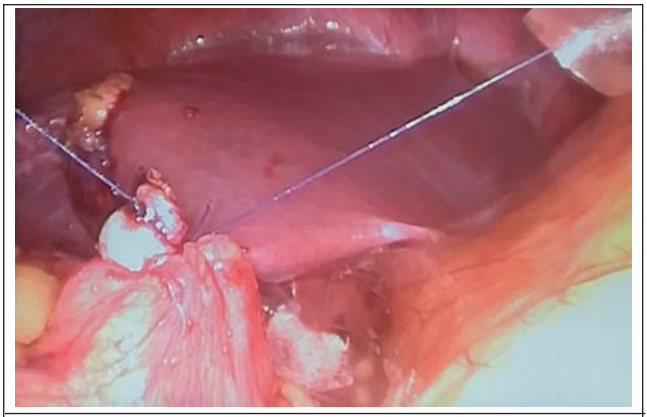

**Figure-2:** Laparoscopic Ligation and division of fistulous tract with absorbable suture.

On inspection, there was greater omentum along with transverse colon adherent to the whole gallbladder. After careful and gradual dissection of omentum from the fundus of gallbladder, a fistulous communication between transverse colon and gallbladder was noted (Figure-1). This fistulous tract was doubly ligated with absorbable suture and then divided (Figure-2). On further dissection of the Calot's triangle, a stone was seen impacted on the neck of the gallbladder and the right hepatic artery was making a loop (Moynihan's hump) with a short cystic artery. So, according to Csendes classification, it was classified as Mirizzi type Va. The cystic artery and duct were carefully clipped and cut after securing the triangle of safety. The gallbladder was dissected from its fossa, and Subhepatic drain was placed. The patient was kept NPO for 48 hours and the drain was removed after 72 hours. The patient was discharged on the third postoperative day. Histopathology of the gallbladder showed chronic cholecystitis with cholelithiasis and no signs of malignancy.

## Discussion

Mirizzi syndrome is a relatively rare finding during cholecystectomy with a reported prevalence of 0.05 to 4% of all cases. It may present with obstructive jaundice as a result of compression on the bile duct. Due to lack of pathognomonic features making a pre-operative diagnosis is often difficult. Most common symptoms reported by the patient are pain and jaundice.[3] Our patient only had pain with no other feature on detailed history or examination.

Some patients may present with deranged liver function tests as a result of stone compression and obstruction on the common bile duct. Biochemical parameters of liver function show a cholestatic pattern. Imaging studies are commonly used in the investigation of the disease. Both ultrasound and CT scan have been reported to have a sensitivity of 20%-40% in the preoperative detection of the condition. ERCP and MRCP both play an important role in achieving the diagnosis with ERCP having interventional benefit.[6] In our case, the patient had a short history with no abnormal features and examination and ultrasound showed no abnormality.

There is no consensus on the management of the condition as it varies with the type of disease, the presentation of the patient and expertise of the surgical team. Open surgery is usually the preferred approach. Cholecystectomy is usually adequate for type I Mirizzi syndrome while type II and III usually require a fundus first approach with subtotal cholecystectomy often being required due to the difficulty associated in achieving a safe dissection at Calot's triangle. For type IV usually a biliary-enteric anastomosis is required.[6,7] Laparotomy is recommended for type V, especially for patients with ileus.[8]

When laparoscopic approach is attempted a high conversion rate has been documented. Laparoscopic surgery is considered technically difficult, time consuming and is associated with increased intra-operative and postoperative complications in such patients and, therefore, is not the current recommended standard. High conversion and complication rates have been reported by various authors and usually only Type 1 should be handled with laparoscopic approach.[8]

Although there are a number of studies on the use of laparoscopic surgery in Mirizzi syndrome, we were able to find only one case report dealing with laparoscopic management of type V. As reported in the case report, use of tri-stapler was made first to take down the biliary-enteric fistula followed by fundus first approach to perform sub-total cholecystectomy.[9] We made use of endo-loop to divide the fistulous tract as, in our case, it was a long and narrow tract, followed by careful dissection and were able to achieve clear anatomy at Calot's triangle.

The rate of complications reported after laparoscopic

cholecystectomy in Mirizzi syndrome patients vary.[2] The patient had an uneventful course and was discharged on the day after surgery. He remained on follow-up and had no postoperative complications. His biopsy report showed chronic cholecystitis.

## Conclusion

Mirizi syndrome is a rare condition. It often presents as an intra-operative surprise with minimal prior symptoms and no particular findings on routine workup. It is important to be aware of the altered anatomy that one may encounter during the performance of laparoscopic cholecystectomy. Most of the literature recommend the use of open approach when dealing with Mirizzi syndrome, however, we were able to achieve a good outcome with careful meticulous laparoscopic dissection.

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## References

1. Bilal M, Haseeb A, Saad M, Ahsan M, Raza M, Ahmed A, et al. The Prevalence and Risk Factors of Gallstone among Adults in Karachi, South Pakistan: A Population-Based Study. Glob J Health Sci 2017;9:106-114.
2. Senra F, Navaratne L, Acosta A, Martínez-Isla A. Laparoscopic management of type II Mirizzi syndrome. Surg Endosc 2020;34:2303-12. doi: 10.1007/s00464-019-07316-6.
3. Beltrán MA. Mirizzi syndrome: history, current knowledge and proposal of a simplified classification. World J Gastroenterol 2012;18:4639-50. doi: 10.3748/wjg.v18.i34.4639.
4. Csendes A, Díaz JC, Burdiles P, Maluenda F, Nava O. Mirizzi syndrome and cholecystobiliary fistula: a unifying classification. Br J Surg 1989;76:1139-43. doi: 10.1002/bjs.1800761110
5. Kulkarni SS, Hotta M, Sher L, Selby RR, Parekh D, Buxbaum J, et al.Complicated gallstone disease: diagnosis and management of Mirizzi syndrome. Surg Endosc 2017;31:2215-2222. doi: 10.1007/s00464-016-5219-9
6. Kamalesh NP, Prakash K, Pramil K, George TD, Sylesh A, Shaji P. Laparoscopic approach is safe and effective in the management of Mirizzi syndrome. J Minim Access Surg 2015;11:246-50. doi: 10.4103/0972-9941.140216.
7. Mithani R, Schwesinger WH, Bingener J, Sirinek KR, Gross GW. The Mirizzi syndrome: multidisciplinary management promotes optimal outcomes. J Gastrointest Surg 2008;12:1022-8. doi: 10.1007/s11605-007-0305-x.
8. Chen H, Siwo EA, Khu M, Tian Y. Current trends in the management of Mirizzi Syndrome: A review of literature. Medicine (Baltimore). 2018;97:e9691. doi: 10.1097/MD.0000000000009691.
9. Yetışır F, Şarer AE, Acar HZ, Polat Y, Osmanoglu G, Aygar M, et al. Laparoscopic Treatment of Type III Mirizzi Syndrome by T-Tube Drainage. Case Rep Surg 2016;2016:1030358. doi: 10.1155/2016/1030358..